## Don't Hate Math!



Amanda L. Raitano, Ed.D.

Indiana Adult Education Summer Institute July 20 – 22, 2015



"The Power of We: Success Through Partnerships"

## About Me:





- ☐ I am an Education Coordinator and GED Instructor in Rhode Island.
- ™ I received my Ed. D. degree from Walden University in 2013.
- I experienced math anxiety through the majority of my formal education.
- My research focuses on student experiences in math and science.
- ✓ I have a passion for helping students overcome math anxiety.

# Math A-Z



# Words My Students Use

03

Angry

**B**oring

Cautious

Dumb

Ecstatic

Frustrated

Get me out!

Hate

Ignorant

Job

Kilograms

**M**ultiplication

Negative

Overwhelming

**P**arallelogram

Quiet

Random

Stupid

Trapezoid

Unknown

Weird

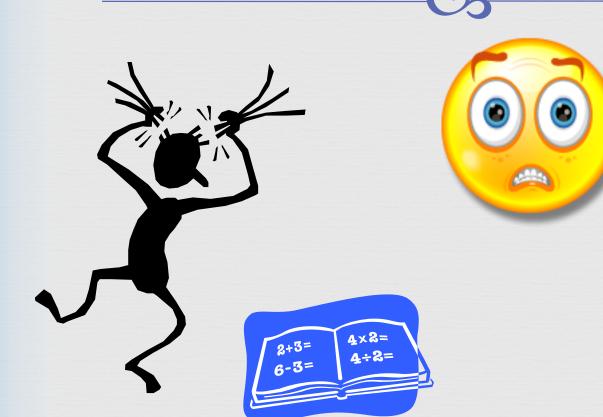
X axis

Y axis

Z zzzz...



# Many Learners Feel...

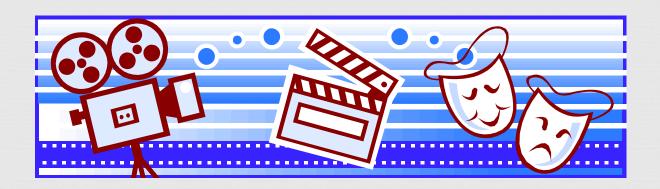






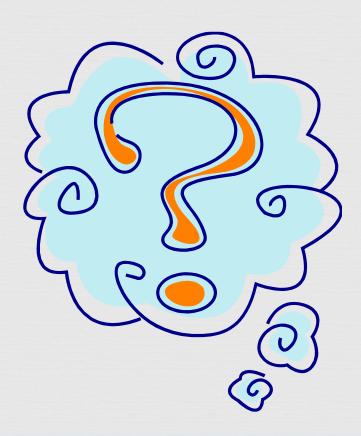
## What Students Say

03



### Why Do Students Hate Math?





# Students Hate Math Because They Have a Difficult Time With It!





# Many Learners Have Difficulty with Math



- Tobias, a leader in the field of math anxiety research explained:
- Math concepts are often taught in pieces.
- Students are often afraid of appearing too smart or too dumb while learning math concepts.
- Students are often rewarded for correct answers.
- Inconsistent terminology produces confusion.

## Math is Confusing

### 03

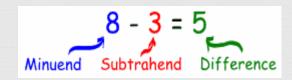
#### Symbol Words Used

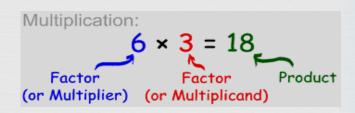
+ Addition: Add, Sum, Plus, Increase, Total

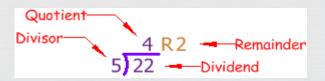
- Less, Difference, Decrease,
  Take Away, Deduct
- <u>Multiplication</u>: Multiply,Product, By, Times, Lots Of
- : <u>Division</u>: Divide, Quotient, Goes Into, How Many Times

Source: http://www.mathsisfun.com/index.htm

Addition: 
$$8 + 3 = 11$$
Addend Addend Sum





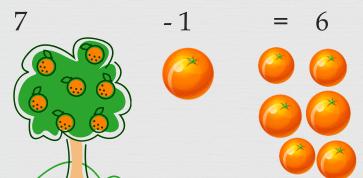


# Things Change!

### 03

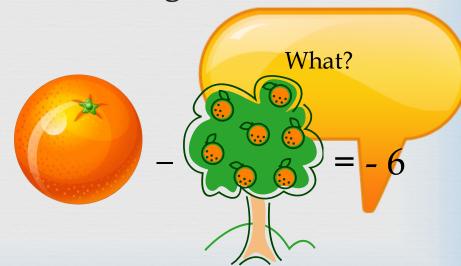
#### **Elementary Grades**

7-1= 6 and you could **never** "do" 1-7!

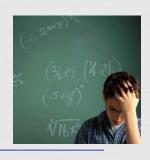


Middle School and Beyond

You <u>can</u> "do" 1 – 7 and the answer is something called a <u>negative</u> number!



# Many Learners Have Math Anxiety



- Children do not appear to be troubled by math anxiety while in the first two or three years in elementary school (Ashcroft and Moore).
- A student's math anxiety occurs in math class and increases in intensity as the student is asked to perform tasks in front of others, with the anxiety culminating during test taking activity (Ashcroft and Moore).
- The long-term effects of math anxiety can lead to avoid courses, college majors, and career paths that involve mathematics (Ashcroft and Moore).
- Students who suffer from math anxiety feel alone, helpless, and often these feelings exacerbate anxiousness a student feels while learning mathematics (Tobias).
- A student's ability to concentrate while learning and doing math work is essential to being successful in the area of mathematics (Tobias).

## Developmental Dyscalculia



#### 03

- According to Shalev and Gross-Tsur (2001), *Developmental Dyscalculia* is a brain based learning disorder with a genetic predisposition that effects the acquisition of arithmetic skills in an otherwise-normal child.
- Individuals with Developmental Dyscalculia have a severe deficit in the ability to process numerical information that cannot be attributed to sensory difficulties, low IQ or inadequate education, all of which results in a failure to develop fluent numerical computation skills (Rubinsten & Tannock, 2010).

### Dyscalculia: Warning Signs By Age

#### 03

#### Young Children

- Difficulty learning to count
- Trouble recognizing printed numbers
- Difficulty tying together the idea of a number (4) and how it exists in the world (4 horses, 4 cars, 4 children)
- Poor memory for numbers
- Trouble organizing things in a logical way - putting round objects in one place and square ones in another

#### School-Aged Children

- Trouble learning math facts (addition, subtraction, multiplication, division)
- Difficulty developing math problem-solving skills
- Poor long term memory for math functions
- Not familiar with math vocabulary
- Difficulty measuring things
- Avoiding games that require strategy

#### Teenagers and Adults

- Difficulty estimating costs like groceries bills
- Difficulty learning math concepts beyond the basic math facts
- Poor ability to budget or balance a checkbook
- Trouble with concepts of time, such as sticking to a schedule or approximating time
- Trouble with mental math
- Difficulty finding different approaches to one
- Source: http://www.ncld.org/typeslearning-disabilities/dyscalculia/what-isdyscalculia

### Tools for Students with Dyscalculia

#### 03

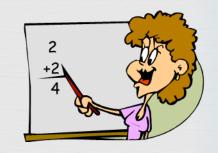
- Use graph paper for students who have difficulty organizing ideas on paper.
- Work on finding different ways to approach math facts; i.e., instead of just memorizing the multiplication tables, explain that  $8 \times 2 = 16$ , so if 16 is doubled,  $8 \times 4$  must = 32.
- Practice estimating as a way to begin solving math problems.
- Introduce new skills beginning with concrete examples and later moving to more abstract applications.
- For language difficulties, explain ideas and problems clearly and encourage students to ask questions as they work.
- Provide a place to work with few distractions and have pencils, erasers and other tools on hand as needed.
- Help students become aware of their strengths and weaknesses. Understanding how a person learns best is a big step in achieving academic success and confidence.

#### Source:

#### What Else Can Instructors Do?



Give students a math anxiety self-test.



Real Have students write a Math Autobiography.

Representation of the Have students write in journals before and after lessons.

Reprovide lessons that are authentic and relevant.

□ Incorporate the Math Anxiety Bill of Rights into your class.

# Do You Have Math Anxiety? A Self-Test

03

Rate your answers from 1 to 5; add them up and check your score below.

(1) = Disagree

- (5) = Agree
- 1. I cringe when I have to go to math class. 1 2 3 4 5
- 2. I am uneasy about going to the board in a math class. 1 2 3 4 5
- 3. I am afraid to ask questions in math class. 1 2 3 4 5
- 4. I am always worried about being called on in math class. 1 2 3 4 5
- 5. I understand math now, but I worry that it's going to get really difficult soon.1 2 3 4 5
- 6. I tend to zone out in math class. 1 2 3 4 5
- 7. I fear math tests more than any other kind. 1 2 3 4 5
- 8. I don't know how to study for math tests. 1 2 3 4 5
- 9. It's clear to me in math class, but when I go home it's like I was never there. 1 2 3 4 5
- 10. I'm afraid I won't be able to keep up with the rest of the class. 1 2 3 4 5

#### **CHECK YOUR SCORE:**

- 40-50 Sure thing! You have math anxiety.
- 30-39 No doubt! The thought of doing math still makes you uneasy.
- 20-29 Perhaps!
- 10-19 Wow! Possibly a math major in the making!

Source: http://www.mathpower.com/anxtest.htm

# Math Autobiography

03

Ask students questions that give you an insight to their previous experiences in math.

Students share autobiography.

Students will realize other learners feel the same way about math.

## Math Lessons Using Life Skills

Remember..."If a student finds their learning to be worthwhile and pleasant, the less it will appear to be mundane or anxiety (Schweinle, Meyer, and Turner 2006)."



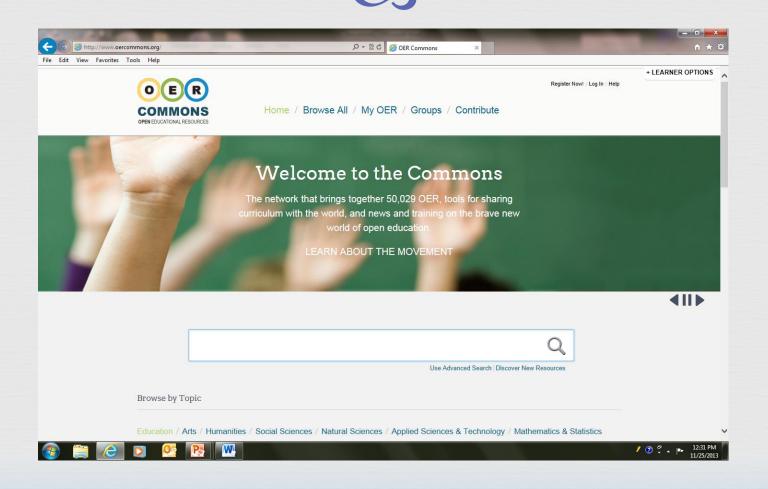
You can't always bring students to the supermarket, but you can bring the supermarket to them.

#### We all have bills!





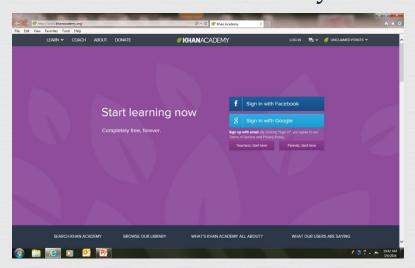
# Looking For Lessons? Visit OER COMMONS



## Incorporate Videos and Computers Into Your Classroom Lessons



#### Khan Academy

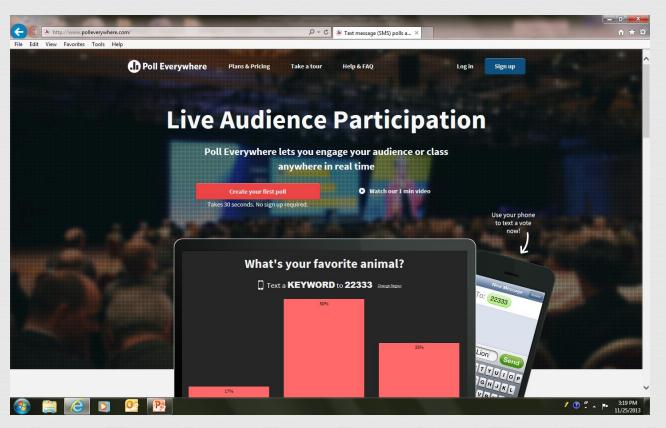


#### Interactive Sites for Education



# A Quick Survey...





#### Math Anxiety Bill of Rights

#### By Sandra Davis

I have the right to learn at my own pace and not feel put down or stupid if I'm slower than someone else.

I have the right to ask whatever questions I have.

I have the right to need extra help.

I have the right to ask a teacher or a tutor for help.

I have the right to say I don't understand.

I have the right not to understand.

I have the right to feel good about myself regardless of my abilities in math.

I have the right not to base my self-worth on my math skills.

I have the right to view myself as capable of learning math.

I have the right to evaluate my math instructors and how they teach.

I have the right to relax.

I have the right to be treated as a competent adult.

I have the right to dislike math.

I have the right to define success in my own terms.

The "Math Anxiety Bill of Rights" is printed in the book "Overcoming Math Anxiety" by Sheila Tobias, published by W.W. Norton and Company, and is available at bookstores and online through amazon.com

# Lets Share!

CB

What do you do in your classroom?

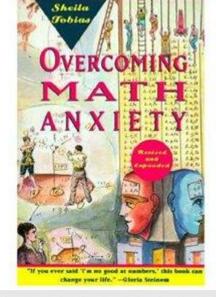


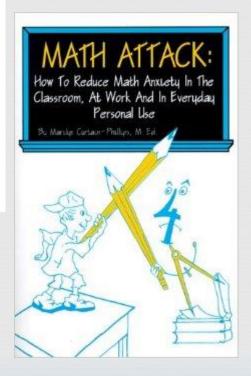


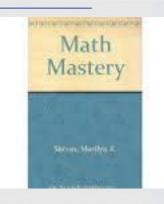


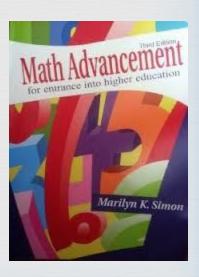
## Resources

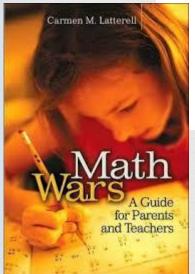












# Questions and Comments





## Thank You

03

Amanda L. Raitano, Ed.D.

**Education Coordinator** 

Blackstone Valley Community Action Program

Pawtucket, RI, USA

Phone: 401-723-4520 ext. 252

araitano@bvcap.org

www.bvcap.org



Amanda L. Raitano, Ed.D.

Mustard Seed Educational Services

South Kingstown, RI, USA

Phone: 401-369-5642

Fax: 866-740-0641

mustardseededucationalservices@gmail.com

www.mustardseededucationalservices.com

